



FACT SHEET

UNITED STATES AIR FORCE

DEFENSE SUPPORT PROGRAM (DSP)



*An artist's rendering of a DSP on orbit.
Art courtesy of Northrop Grumman.*

The Air Force Defense Support Program satellites orbit the earth approximately 35,780 kilometers over the equator. DSP satellites use infrared sensors to detect heat from missile and booster plumes against the earth's background. The DSP constellation is operated from the Space Based Infrared Systems (SBIRS) Mission Control Station (MCS) at Buckley Air Force Base, Colo. The Defense Support Program is managed by the Space Based Infrared System Program Office at the Air Force Space and Missile Systems Center (Air Force Space Command) at Los Angeles Air Force Base, Calif.

DSP EVOLUTION

The Defense Support Program grew out of the successful 1960s space-based infrared Missile Defense Alarm System known as MiDAS. The first successful launch of MiDAS was May 24, 1960. Between 1960 and 1966, 12 MiDAS launches deployed four different types of

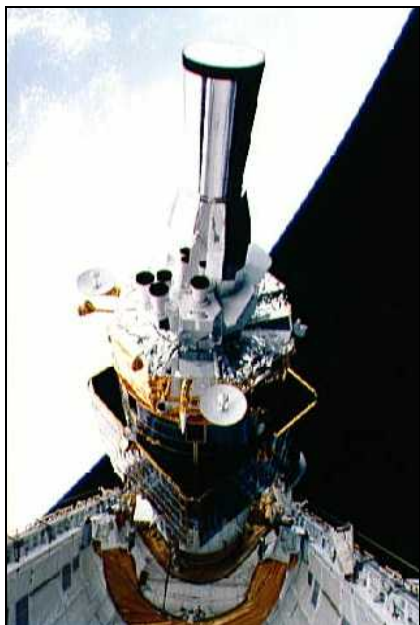
increasingly sophisticated sensors — sensors leading the way to the development, launch and use of DSP.

On November 6, 1970, the U.S. Air Force launched a classified satellite on a Titan IIIC rocket from Launch Complex 40 at Cape Canaveral Air Force Station, Fla. The satellite's vital mission provided early warning for Intercontinental Ballistic Missile launches. This once classified satellite, now known as DSP, became the first of many to be launched over the next 30 years.

In response to the evolving threats, DSP has undergone five major upgrades that allow it to provide more accurate and reliable data to the warfighter. For example, the addition of a medium wavelength infrared capability has provided enhanced missile warning mission utility. This upgrade marked the first space sensor application of mercury cadmium telluride infrared sensors — the material of choice for today's infrared sensors. The current DSP spacecraft is more survivable than its predecessors, accommodates 6,000 detectors, uses 1,274 watts of power and weighs 5,200 pounds.



*An early DSP satellite. Photo
courtesy of Northrop Grumman.*



DSP 16 is deployed from the Space Shuttle Atlantis. Photo courtesy of NASA.

Phase I, 1970-1973, 4 satellites
 Phase II, 1975-1977, 3 satellites
 Multi-Orbit Satellite Performance Improvement Modification (MOS/PIM), 1979-1984, 4 satellites
 Phase II Upgrade, 1984-1987, 2 satellites
 DSP-1, 1989 - present, 9 satellites launched to date

LAUNCHES AND SATELLITE OPERATIONS

DSP has a history of launching atop Titan III and IV family of launch vehicles (to include the Titan addition of the Solid Rocket Motor Upgrade), with one exception to date. DSP-16 was launched aboard NASA's Space Shuttle *Atlantis* in November 1991. The last launch, DSP Flight 22 was carried into geosynchronous orbit by Lockheed Martin's Titan IVB launch vehicle and the Boeing's Inertial Upper Stage in February 2004. The final DSP satellite to launch, Flight 23, will be the first operational satellite to launch atop Boeing's Delta IV Heavy Evolved Expendable Launch Vehicle (EELV).

After launch, a team comprised of specialists from the DSP program office, the Aerospace Corporation, and Northrop Grumman will begin on-orbit checkout of the satellite. The

on-orbit systems checkout ensures the satellite is ready to begin operations. Once the satellite is deemed operational, it is turned over to Air Force Space Command for use.

In recent years, scientists have developed methods to use DSP's infrared sensor as part of an early warning system for natural disasters like volcanic eruptions and forest fires. In addition, researchers at The Aerospace Corporation have used DSP to develop portions of a Hazard Support System that will aid public safety in the future.

DEFENSE SUPPORT PROGRAM SATELLITE DATA

Primary mission:

Strategic and tactical missile launch detection

Contractor team:

Northrop Grumman Space Technology and Northrop Grumman Electronic Systems

First Deployed: November 6, 1970

Last Launch: Feb. 14, 2004

Final Launch: TBD

Prepared by the Space and Missile Systems Center SBIRS Program Office, External Affairs Office. Current as of February 2005.



DSP 23 at the Northrop Grumman's Redondo Beach facility. Photo courtesy of Northrop Grumman.